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ABSTRACT

A study evaluated an adaption of the Stallings Process of Teaching Reading in Secondary Schools in a large urban public school system. This inservice training program is designed to increase teachers' effective use of time. The program is composed of pre-training observations and resulting feedback on needed improvements in classroom behavior, workshops on effective classroom behaviors and strategies, and post-training observations. The evaluation focused on the impact of training on students' reading achievement involving all teachers trained and on math achievement for students whose math teachers were trained. Also investigated was the relationship between teacher level of implementation of selected classroom behavior variables and student achievement. The sample consisted of 16 trained and 13 untrained junior high school teachers and students from each of the teachers' classes (N=613). Teacher level of implementation was measured using the Secondary Observation Instrument. Student pre- and post-test performance was measured using the Comprehensive Tests of Basic Skills. Evaluation of program impact on students and of the relationship between level of implementation and student post-test achievement was carried out by analysis of covariance and the Spearman Rho, respectively. No significant effects were found on any analysis. Reasons for the lack of effects are discussed. (JD)

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IMPACT OF TEACHER USE OF TIME TRAINING ON STUDENT ACHIEVEMENT

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Introduction

It is a very straightforward and commonsensical notion that the more time one devotes to an endeavor, the more success one is likely to experience with it. In order to progress on the piano, one must spend time practicing. In order to become a better reader, one must spend time on reading instruction and activities.

One might easily assume that teachers are well aware of this obvious relationship and that they keep their students academically engaged for uniformly high percentages of the time available in school. Research, however, has not borne out this assumption. Borg (1980) has noted a wide variability in the amount of time that is allocated for academic instruction and in the amount of time students are actually engaged in academics while in the classroom.

Studies of the relationship between time spent on academic tasks and achievement (Bloom, 1974; Denham & Lieberman, 1980; Good & Beckerman, 1978) have shown evidence in support of the common sense notion that more time on task equates with greater achievement for the great majority of students.

Kounin (1970) and Brophy and Evertson (1974) have researched and

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chronicled the relationships between various classroom management variables and student time on task. Borg (1980) noted that a great deal of evidence supports the notion that classroom strategies affect time on task, which in turn, affects achievement gains. What is needed next, he concludes, is to test programs for training teachers to manage their classrooms so as to increase student time on task.

This study provides one such test. The training researched here is a variation of Stallings' Process of Teaching Basic Reading Skills in Secondary Schools (1979), which shall be referred to hereafter as Effective Use of Time (EUT) training. Stallings' EUT training was developed through a study of secondary school remedial reading classes in six northern California school districts. The study showed that students made greater reading achievement gains in classrooms where teachers spent more time instructing, providing supportive feedback and having students read aloud. These successful teachers were closely involved with their students during the entire class.

The program consists of pre-training observations which provide feedback to participating teachers about their need for improvement on classroom behavior variables (see Appendix for variables) that Stallings (1979) found to be related to achievement in secondary level reading classes. Five weekly workshops, two and one half hours each, follow. In the workshops, teachers discuss and commit to work on classroom behaviors and strategies needing improvement, as pinpointed in the observation profiles. One month after the training ends, post-training observations are conducted. The resulting observation profiles are then presented and discussed in a final workshop.

This in-service training, with one important difference, was presented in the Washington D.C. Public Schools in November through January of the 1981-82 school year. The difference between the original Stallings program and the one produced in the D.C. Public Schools lies in the target audience and the assumptions underlying its selection. The D.C. target audience consisted of junior high school teachers of English, science, social studies, mathematics and reading - all of whom are responsible for helping to improve students' reading achievement scores. The assumption in the D.C. Public Schools was that EUT training would be effective in increasing student reading achievement scores even if given to only one of a student's content area teachers

Besides strategies to teach reading, the EUT program also teaches many strategies that are related to general teaching effectiveness. It is therefore likely, that where the program is implemented in content areas other than reading, increased student performance in those content areas will occur. In fact, when one considers the original study as having been conducted in the area of reading, it seems even more likely that content area achievement for students whose content area teachers were trained would be affected rather than reading achievement for students of all trained teachers.

Purpose

The purpose of this study was to determine the impact of EUT training on student reading achievement. Also of interest was the impact on content area scores of students whose content area teachers were trained. The difference in results obtained on reading scores and on content area scores when using an analysis of variance of gain scores and when using pre-training achievement test scores as the covariate in an analysis of

of covariance was also investigated. Finally, the study investigated the relationship between the level of teacher implementation of the training and student achievement.

Methodology

Sample

The sample consisted of 29 junior high school teachers (16 trained and 13 untrained teachers*) and the students from one of each of the teachers' classes (N=613). The teachers came from all four regions of the D.C. Public School system. The students had wide ranging cultural and socio-economic backgrounds, as well as varying levels of achievement.

Although 29 teachers were actually trained, only 16 were included in this study. Nine seventh grade teachers were excluded because achievement test scores were not available for their students. Three ninth grade teachers were excluded because each was the sole trained teacher in his or her content area. Teachers participating in training were predominantly volunteers but included a few who were required or asked to participate by their principals. Each teacher in training chose one class in which to apply what she was learning in the training. These classes were chosen for convenience to the trainer/observer for conducting observations.

Non-trained teachers were chosen to match trainees on grade and subject taught within each participating school. In two instances involving algebra teachers, comparison teachers from different schools had to be used because there was only one algebra teacher per school.

Instrumentation

Teacher behavior was measured using the Secondary Observation Instrument

* No comparison teachers were provided for three of the trained teachers.

(SOI). The SOI was developed at SRI International by Jane Stallings and Margaret Needels. It is teacher-focused and designed to be sensitive to different kinds of instructional methods, teacher-student interactions and classroom environments. It provides indices of teacher functioning on 31 variables which reflect positive and negative instructional behaviors. (A sample of a teacher observation profile with results derived from observations of one teacher is presented in the Apppendix.) All variables are defined with respect to a specified criterion. It is these variables that served as the focal point of the training.

In defining teacher level of implementation (L) on the SOI, the following formula was applied: L = the sum of scores (across all SOI interaction variables except All Academic Statements - an aggregate variable, and Praising Interaction, which was not scored) of the number of points below criterion on positive variables and above criterion on negative variables. Negative variables are those variables which are negatively related to student achievement and positive variables are positively related to student achievement. A high score on this scale indicates a low level of implementation while a low score indicates a high level of implementation.

Student performance was measured using the Comprehensive Tests of Basic Skills (CTBS) (levels 3 and 4, Form S). The tests were administered during the implementation of the D.C. Public Schools city-wide testing programs in May 1981 and May 1982. The 1981 data was used as the pre-test or pre-training achievement data while the 1982 data was used as the post-test or post-training achievement data. Test data were collected from the regional offices and from the schools. In this study all raw scores were converted to standard scale scores.

Procedure

The training program consisted of a pre-training observation period, five two and one-half hour workshops (no more than one per week over seven weeks), a post-training observation period, and a follow-up workshop to discuss post-training observation profiles. Both the pre- and post-training observations included two to three observation visits over the course of three weeks. They were conducted by four school district instructional supervisors (who were chosen to become trainers) with the assistance of several central office program personnel. Due to resource constraints, observations were conducted only on the trained teachers, and not on the comparison group. All observers were trained and certified by an associate of Jane Stallings. The observation training consisted of seven days of discussion about coding standards, drill and practice, and both written and "hands on" testing. Eighty-five per cent (85%) reliability between the observer-in-training and the observation trainer was required for certification upon completion of observation training.

The workshops were conducted at the end of the school day in a central location. The master trainer conducted her workshop for a small group of teachers on one day as the apprentice trainers observed her. On the following afternoon, the master trainer met with the apprentices to discuss workshop content and process. Following this meeting, the four apprentice trainers each lead a workshop session for a small group of teachers from their respective regions.

The workshops present the research background of the EUT training and a review of each trainee's observation behavior profile. Each trainee was asked to make a commitment to work on behaviors identified in her profile as

needing improvement. Workshop discussions centered on topics such as direct instruction, providing feedback, interactive instruction and behavior management.

Evaluation Questions

The questions raised for this evaluation were as follows:

1. Is there an effect of training on student reading performance?
2. Is there an interaction effect of training and trained teachers' content area on reading performance?
3. Is there an effect of training on the math, science, and social studies performance of students whose math, science, and social studies teachers respectively, were trained?
4. Is there a relationship between teacher level of implementation and student reading performance?
5. Is there a relationship between the math, science, and social studies teachers' level of implementation and student math, science, and social studies performance, respectively?
6. Is there a difference in findings when using an analysis of covariance procedure and when using the gain score approach?

Design for Analysis

For the analysis of the effects on student performance, the design used was the pretest-posttest comparison group design with training and content area as factors.

Statistical Analyses

Evaluation questions 1 and 2 were analyzed using analysis of covariance with the reading pre-test scores as the covariate (N=441).

Evaluation question 3 was modified. There was very little CTBS data on science and social studies. Thus no analysis was performed on these content areas. An analysis of covariance however, was conducted on the math data, using the pre-test math scores as the covariate (N=120).

Evaluation question 4 was analyzed using the Spearman Rank-order correlation procedure to measure the relationship between teacher level of implementation and class mean post-test reading score (N=16).

Evaluation question 5 was not answered due to an insufficient number of math, science, and social studies classes.

To answer question 6, evaluation questions 1, 2 and 3 were reanalyzed using an analysis of variance of gain scores (reading scores for questions 1 and 2 and math scores for question 3). The unit of analysis was student (N=613). There were 613 students in the analysis of the reading scores and 178 in the analysis of the math scores.

The analyses of program effects on student performance were performed using the SPSS MANOVA program. This program was selected because it controls for unequal cell sizes and analyzes the variance arising from the complex nesting in this study.

Results

There were no significant effects for the analyses with reading scores as the dependent variable. This was upheld for both procedures - the analysis of covariance and the gain score approach. There were also no significant effects for the analyses with math scores as the dependent variable. Again, this was true of the two procedures used.

There was no relationship demonstrated between teacher level of implementation and student reading performance.

Interpretation of Findings and Discussion

Before making firm conclusions about the lack of effectiveness of the

program, a number of factors about the nature of the adaption of the EUT program and about the quality control implemented, need to be considered.

It is important to note that in the first year of adaption of the training program, there was limited concern with program effects on students. The focus was on changing teacher behavior to meet the criteria established on the SOI, and on providing school system personnel with skills that can be passed on, "pyramid style", to other teachers (Bush, 1983). The objective of changing teacher behavior was met, judging from the post-observation scores on the SOI, teacher responses to a Levels of Use (LoU)* interview (Prom and Williams, 1982) and to a questionnaire administered one year after training (Bethune, 1983).

Why then the lack of effect on student performance if teacher change actually occured? Several limitations of this study as well as idiosyncracies of the program may be responsible.

The first limitation is in the assumed difference between the treatment and comparison teachers. There was no observation of the comparison teachers to find out the degree to which their behaviors were different from those of the trained group. A most important finding derived from the analysis of the responses of a randomly selected group of nine trained teachers to the LoU interview was that they all conducted staff development workshops on the components of EUT in their respective schools. This evidence strongly suggests a contamination of the comparison teachers. Recall that these were teachers who came from the same school as the trained teachers. Stricter

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* The Levels of Use (LoU) interview is a focused interview which seeks to determine behavioral adaptations made by individuals in the adoption of an innovative program. The interview protocol as well as the rating scheme were developed by Loucks, Newlove and Hall (1975).

controls should have been applied to avoid contamination of the comparison group.

Secondly, since the program was conducted in the middle of the school year, there was little time for teacher behavior changes to have an impact on student performance.

One other factor to consider in interpreting the findings is that the Stallings' EUT training is designed for use with low achieving students. For high achieving students, research reveals that attempting to increase time on task has a limited effect on their performance. This group normally manifests a high level of task involvement. In this study, students of varying achievement levels were included in the sample. The analysis, however, did not consider level of achievement as a factor. A design blocking on such levels might have provided a clearer picture of the effects of the EUT training on students. Such an analysis was not conducted as it would have further complicated the problem of unequal cells.

Recommendations for Future Evaluations

The following are recommendations for future program evaluations of EUT.

1. Allow a full year for implementation of the strategies learned.
2. Apply strong quality controls to ensure teacher use of the training components and to avoid contamination of the comparison group where a comparison group design is selected as the basis for data analysis.
3. Analyze the effects on students with varying levels of achievement.
4. In a situation such as that currently operating in the D.C. Public Schools where all or most teachers are exposed to the training or elements of it and where the training strategies are used with all students, a future evaluation study might seek to analyze the effect on students with varying levels of achievement.
5. Collection of data on students should begin at the time of program implementation if class lists and student scores are not computerized.

REFERENCES

Bethune, G. W. Academic learning time: The current status of the Stallings training. Paper presented at the Annual Meeting of the American Educational Research Association, Montreal, 1983.

Bloom, B. S. Time and learning. American Psychologist, 1974, 29 (9). 682-688.

Borg, W. R. Time and school learning. In C. Denham & A. Lieberman (Eds.), Time to Learn. Washington, D.C.: National Institute of Education, 1980.

Brophy, J. & Evertson, C. Process-product correlation in Texas teacher effectiveness study. Austin: University of Texas, Research and Development Center for Teacher Education, June, 1974.

Bush, M.M. The complexity of institutionalizing a program: Acquisition of training, observing and computing capability. Paper presented at the Annual Meeting of the American Educational Research Association, Montreal, 1983.

Denham, C., & Lieberman, A. Time to learn. Washington, D.C.: National Institute of Education. 1980.

Good, T. L. & Beckerman, T. M. Time on task: a naturalistic study in sixth grade classrooms. Elementary School Journal, 1978, 78(3), 193-201.

Kounin, J. Discipline and group management in classrooms. New York: Holt, Rinehart and Winston, 1970.

Loucks, S.F., Newlove, B.W. and Hall, G.E. Measuring Levels of Use of the Innovation: A manual for trainers, interviewers and raters. Austin: Research and Development Center for Teacher Education, University of Texas at Austin, 1975.

Prom, S.E. and Williams, S. The Evaluation of the Fidelity of Implementation of National Diffusion Network Programs adopted by the District of Columbia Schools, 1981-1982. Washington, D.C.: District Facilitator Project, District of Columbia Public Schools, 1982.

Stallings, J. A. How to change the process of teaching reading in secondary schools. Educational Horizons, 1979, 57(4), 196-201.

APPENDIX

BASIC SKILLS TEACHER PROFILE

VARIABLES	CRITERION	PRE OBSERVATION RESULTS	POST OBSERVATION RESULTS	CHANGES
+ All Academic Statements	80.00	92.2	92.3	
+ Teacher Instructs/Explains	25.00	30.3	11.3	
+ Teacher Asks Direct Questions	8.00	28.5	13.8	
+ Teacher Asks Clarifying Questions	3.00	0	1.7	
+ Teacher Calls Upon Different Students	6.00	6.0	8.5	
+ Student Respond	8.00	2.4	15.4	
+ Teacher Praises or Supports	4.00	4.7	7.9	
+ Teacher Corrects	4.00	5.8	2.1	
+ Teacher Corrects and Guides	2.00	3.3	1.6	
+ Students Read Aloud	12.00	0	12.7	
+ Teacher Reads Aloud	10.00	0	0.3	
− All Organizing or Managing Statements	12.00	7.7	7.3	
− Teacher Working Alone	5.00	3.4	0.4	
− Teacher Monitoring Written Work	5.00	12.9	7.1	
− All Behavior Statements	3.00	2.8	0	
− All Social Statements	2.00	0	0	
− Intrusion	.00	0	1.1	
+ Positive Interactions	2.00	0	2.0	
− Negative Interactions	.00	0	0	
+ Praising Interactions	2.00			

SNAPSHOT
SUMMARY REPORT 1
STUDENT INVOLVEMENT IN TASKS

	CRITERION	PRE OBSERVATION RESULTS	POST OBSERVATION RESULTS	CHANGES
Reading Silently	15.00	0	0	
Reading Aloud	6.00	0	13.6	
Making Assignments	10.00	0	10.8	
Instruction/Explanation	25.00	40.0	26.8	
Discussion/Review Assignment	10.00	34.4	28.5	
Practice Drills	4.00	0	0	
Written Assignments	20.00	20.0	13.6	
Taking Test/Quiz	5.00	0	0	
Non-Math/Reading Instruction	.00	0	0	
Social Interaction	.00	0	0	
Student Uninvolved	.00	3.5	0	
Being Disciplined	.00	0	0	
Classroom Management	5.00	0	0	